

Northrop Grumman (NG)/Navy Progress on Remediation of Bethpage Sites
(Nos. 130003, 130003A, 130003B and 130003C)

Status and Milestones as of August 8, 2017

Operable Unit 1 Addressed in 1995 ROD & Includes Onsite Activities: Remedies have generally been implemented and are operating. Navy and NG share responsibility.

- Soil Vapor Extraction (SVE) System continues operating to successfully to reduce soil gas concentrations and prevent off-site migration of soil vapor since 2009. The Navy is performing offsite soil vapor monitoring in a residential neighborhood because recent sampling events have detected cis-1,2-Dichloroethylene in soil gas collected from the intermediate and deep samples at one station. The Navy believes these detections are due to an offsite source. The Navy is currently preparing access agreements with the Town of Oyster Bay.
- Additional soil vapor intrusion work is underway by NG and expected to be completed in 2017.
- Navy met with the Department on 10/20/16 to discuss an FS for PCB contamination at former Plant 3 prior to submittal. Navy was told their revised remedy was unacceptable and Navy is reworking the FS. Navy wanted to propose containment, but DEC indicated that the remedy had to be consistent with the NG OU3 PCB remedial action and significant PCB removal is required by the Navy.
- Navy preparing a ROD amendment later in 2017/early 2018 due to a significant change in the volume and distribution of PCBs in the soil.
- Site 4 (AOC-22) steam injection with free product recovery remedial action began on July 10, 2017 to address No. 6 fuel oil contamination. An underground storage tank was found during the preparation to install a soil vapor extraction well. The tank will be sampled for characterization, appears to contain some petroleum product, and will be removed in late August 2017.

Operable Unit 2 Addressed in 2001(NG) and 2003(Navy) RODs & Includes On-Site and Off-Site Groundwater Activities: ROD remedies have generally been implemented and are operating. Consent Order for OU2 with NG (April 2015)

- Onsite groundwater containment system by NG has been operating since 1998 and has been determined to be effective. An area of clean water continues to develop downgradient of the ONCT system. In total, the system has removed nearly 200,000 pounds of VOC contamination from the aquifer.
- GM-38 hot spot remedial system has been operated by the Navy since 2008. In total, 3.4 billion gallons of contaminated water captured and treated resulting in the removal of 10,000 pounds of VOC contamination from the aquifer.
- Installation of 30 sentinel/outpost monitoring wells upgradient of water district supply wells by Navy completed in 2015. These sentinel/outpost monitoring wells were sited to provide 5-year early detection to downgradient water supply wells.
- Delineation of off-site groundwater by Navy – Vertical Profile Borings: The program is ongoing and 5 VPBs and 21 monitoring wells are planned to be installed in 2017.
- Quarterly and semi-annual groundwater sampling and laboratory analysis continues throughout the plume. Programs include the collection and analysis of samples from more than 128 groundwater monitoring wells annually.

- Navy submitted a work plan to complete a capture zone analysis near the NY American Water and South Farmingdale Water District well fields.
- Navy submitted a work plan for the rehabilitation of the Arthur Avenue recharge basin that serves as the discharge location for the GM-38 treatment plant effluent.
- **BWD6-2 (RE108) Hotspot:** Identified TCE hotspot near well RE108 in 2014. Navy agreed to address this groundwater contamination in 2015.
 - Navy pursuing construction of an Interim Groundwater Recovery System (Phase I RE-108 System) to begin addressing RE-108 hotspot area more rapidly than the current schedule (see below) for the full RE-108 groundwater recovery system. Navy expects to submit a 30% design document to the Department in early fall 2017.
 - Capture zone pilot test at BWD 6-2 started March 2016. Draft Report shared in October 2016 – it is being reviewed by Bethpage WD prior to official submission – review not complete
 - The installation of a test recovery well (RE-137) was completed in January 2017 and an aquifer pumping test completed in April 2017 to aid in the selection and design of the RE-108 recovery wells. Navy will be submitting a report summarizing the aquifer pumping test in the fall 2017.
 - A work plan submitted by the Navy on 2/13/2017, to evaluate the capacities of two recharge basins for the RE-108 treatment system. Department approval provided on 3/16/17 and Navy working on obtaining basin access.
 - RE-108 Current Schedule/Path Forward:
 1. Complete RE-108 plume hotspot delineation – Completed June 2016
 2. Basis of Design Report – 2017
 3. Property Access (Underway) – 2016-2019
 4. Detailed Design Activities – 2019-2020
 5. System Construction – 2021
 6. System Startup - 2022

Operable Unit 3: Bethpage Community Park 2012 ROD (NG): Consent Order for OU3 with NG (May 2014)

- Onsite Groundwater Containment System operating since 2009 and has been determined to be effective. An area of clean water continues to develop downgradient of the Groundwater Containment system. In total, the system has removed nearly 2,200 pounds of VOC contamination from the aquifer.
- Soil Vapor Extraction System (for Vapor Intrusion) continues to successfully reduce soil gas concentrations and prevent off-site migration of soil vapor since 2009
- Residential Properties Adjacent to Former Access Road
 - Predesign Report received and approved 8/7/15.
 - Grumman committed to implement remedy 9/8/15.
 - Grumman began implementing remedy September 2015.
 - Grumman investigated 100 percent of the properties initially identified for testing totaling 38 residential properties. NGC completed PCB and chromium-impacted soil removal from all 30 of properties identified as needing action and letters summarizing the remedial work were sent to the residents on 4/18/17.

- Ballfield: PCBs and Metals
 - Predesign Report received October 2015, revised 1/19/16, and approved 3/17/16.
 - Grumman committed to implement Remedial Design/Remedial Action (RD/RA) 3/25/16.
 - Pre-application meeting held with EPA TSCA on 5/2/16.
 - Design work plan was expected June 2016, but was not received due to NG ongoing discussion of TSCA requirements with EPA. Addressing EPA concerns is continuing to delay the schedule since the degree of questioning was not anticipated at time schedule developed.
 - NG originally scheduled to start additional pre-design soil sampling in June 2017 to provide additional delineation of PCBs in soil, but Northrop Grumman working on an updated access agreement with the Town of Oyster Bay.
 - Most recent testing to evaluate the soil washing option suggests that soil washing may not be effective and Northrop Grumman will resume design of the excavation and off-site disposal option.

- Ballfield – Source Area VOCs
 - Grumman committed to implement Remedial Design/Remedial Action (RD/RA) 3/25/16.
 - Predesign Report received October 2015, revised 6/30/16, and conditionally approved 7/29/16.
 - Design work plan received 7/5/16 and approved 7/29/16.
 - Department responded to RAO questions for cleanup criteria in August 2016
 - NG has prepared the bid packages.
 - Schedule showed solicitation of contractors in December 2016 and start of remediation in spring 2017. However, NG's consultant has indicated that the solicitation has not occurred because contractors are reluctant to provide bids without fully understanding requirements that the Town of Oyster Bay may include in an updated access agreement. Therefore, remediation may not start until later in 2017/early 2018. Northrop Grumman is currently working on an updated access agreement with the Town of Oyster Bay.

- RW 21 TCE Groundwater Hotspot
 - Predesign Report received 2/16/16 and approved 3/17/16
 - Grumman committed to implement RD/RA 3/29/16
 - DEC approved extraction well locations, including an additional well on 4/28/16, needed for withdrawing and treating groundwater from the RW-21 Hotspot Area
 - Design work plan (60% Design) received September 2016 and DEC provided comments on 1/5/2017.
 - Updated 60% design drawings submitted on 1/11/2017 and DEC had no additional comments. 90% design drawings are being developed.
 - Recovery well installations started July 2016.
 - Northrop Grumman provided a site tour to concerned residents and the Town on 2/20/2017 to address concerns related to the proposed RW-21 groundwater treatment system and the drilling and installation of RW-20 (3rd well requiring installation). This included a visit to the Navy's GM-38 groundwater treatment plant.
 - NG held a community meeting on 4/6/17 to discuss status of the proposed RW-20 installation in the residential area. Supervisor Saladino along with several residents, water district representatives, and DEC in attendance.
 - Installation of the third and final recovery well (RW-20) completed 7/24/17.

- Northrop Grumman has committed to the Department to sample the three recovery wells (RW-20, RW-21, and RW-22) and three groundwater monitoring wells for Radium 226, Radium 228, and 1,4-Dioxane analysis. This sampling is scheduled to occur during the week of August 28, 2017.
- Hydraulic Effectiveness Study OU3 (Bethpage Park) Containment System
 - Predesign Report approved 7/31/16
 - Order committed Grumman to implement any actions DEC determined necessary for additional investigative work identified in report; Grumman was expected to submit work plan by July 2016 and to implement it by September 2016. Response overdue but this is work not required by DEC but suggested by NG due to possible upgradient source.

Outreach and Coordination Activities

- 2017 1st quarter NWIRP/Northrop Grumman Groundwater Quarterly Coordination Meeting held 3/1/2017.
- U.S. Navy Resident Advisory Board (RAB) meeting held 4/5/2017.
- NG held a community meeting for RW-20 installation on 4/6/17.
- Congressman Suozzi holding a roundtable discussion on 5/8/17.
- Department staff meeting with water districts on 8/10/17 to provide an update on site activities and the FS/Alternatives Analysis.
- 2017 2nd quarter NWIRP/Northrop Grumman Groundwater Quarterly Coordination Meeting being scheduled for September 11, 2017.

HDR Alternatives Analysis and Feasibility Study

- NYS announced engineering study to evaluate remediation alternatives as part of a Feasibility Study (FS) in February 2017. The Department subsequently issued a work assignment to HDR for completion of the engineering study.
- Engineering study will include installation of wells in southern portion of plume to support the FS and partnership with the USGS to perform groundwater modeling and evaluate remedial alternatives.
- DEC approved USGS work plan for completion of modeling program on June 30, 2017.
- Drilling at the first of two vertical profile boring locations along the leading edge of the plume began on July 27, 2017.
- Major milestones include:
 - 1) Report preliminary findings of the evaluation. (Hold Public Session) in October 2017.
 - 2) Present remedial alternatives that will be evaluated in the Feasibility Study in December 2017.